Photoproduction in BeAGLE - validation

18x110 eAu VM photoproduction

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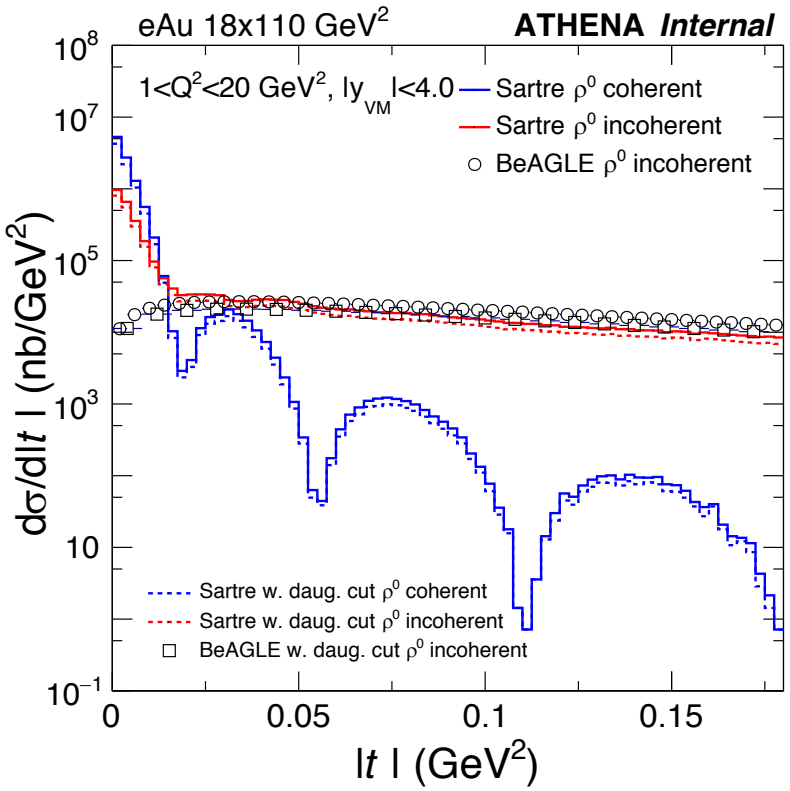
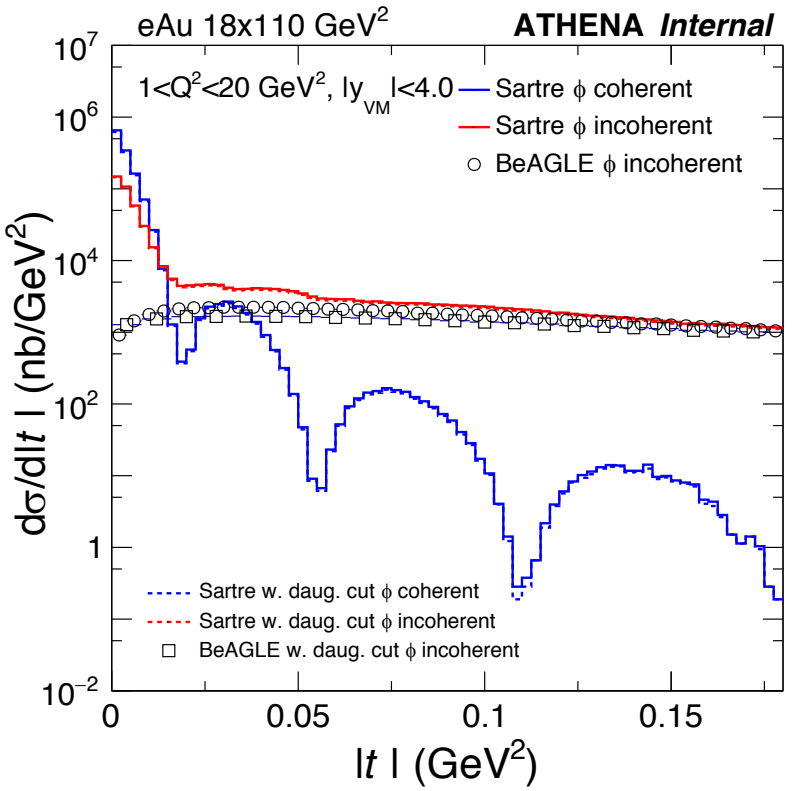
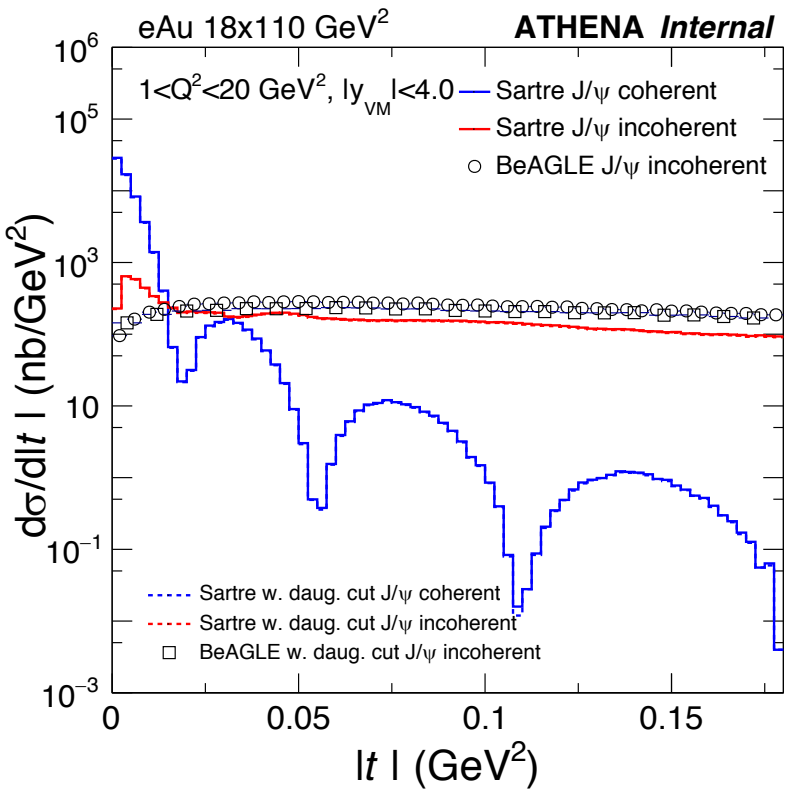
Quick update

- A bug was found, related to the scattered electron in PHP for the vetoing process (mentioned in email).
- Another issue was related to the Q2 limit in Sartre. Sartre (files that I have) has a weird cut, which makes the comparison to BeAGLE not apple-to-apple.
- Veto efficiency is found to be similar, which makes more sense!.
- Validation of BeAGLE against STAR UPC AuAu data [first time!]
- Some questions on BeAGLE vs Sartre

Last week – electro-

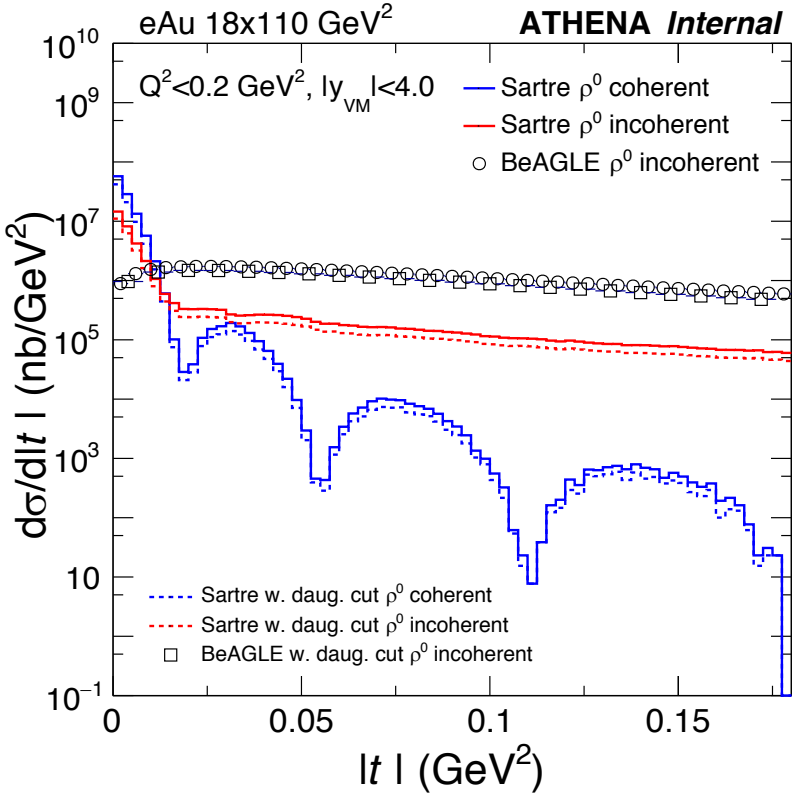


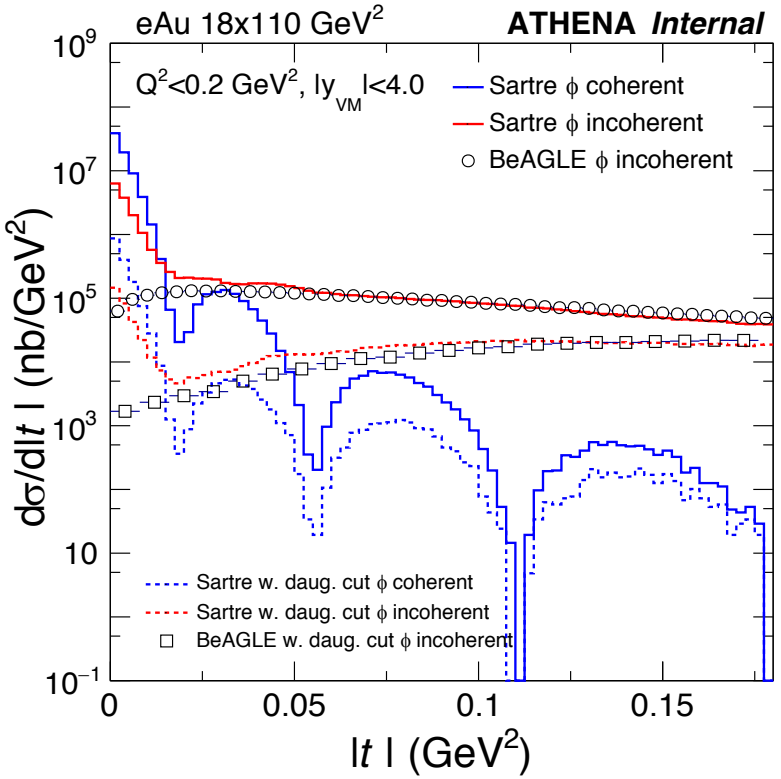


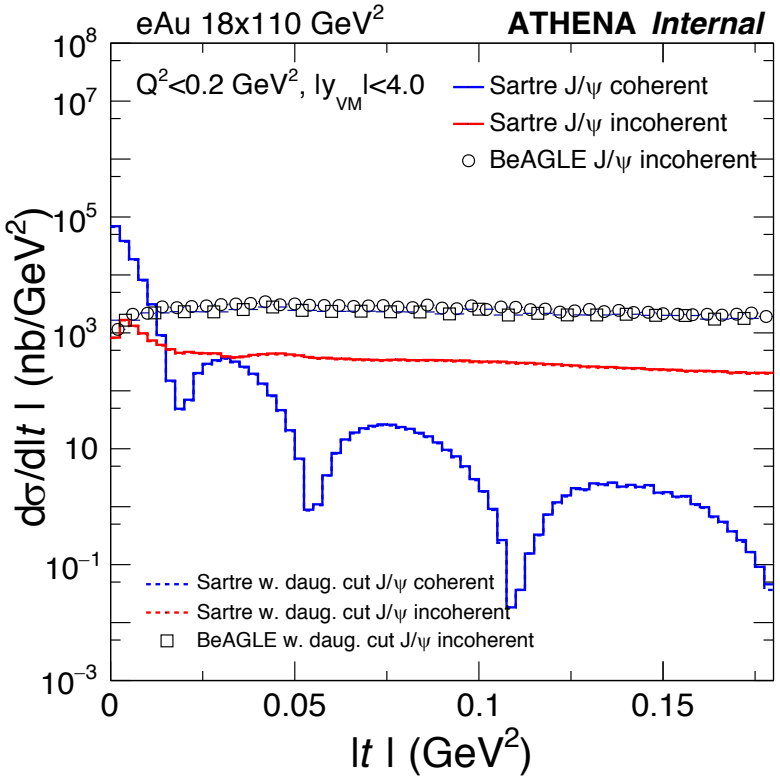


[Cross sections are not so different btw BeAGLE and Sartre, relatively]

Last week – photo-

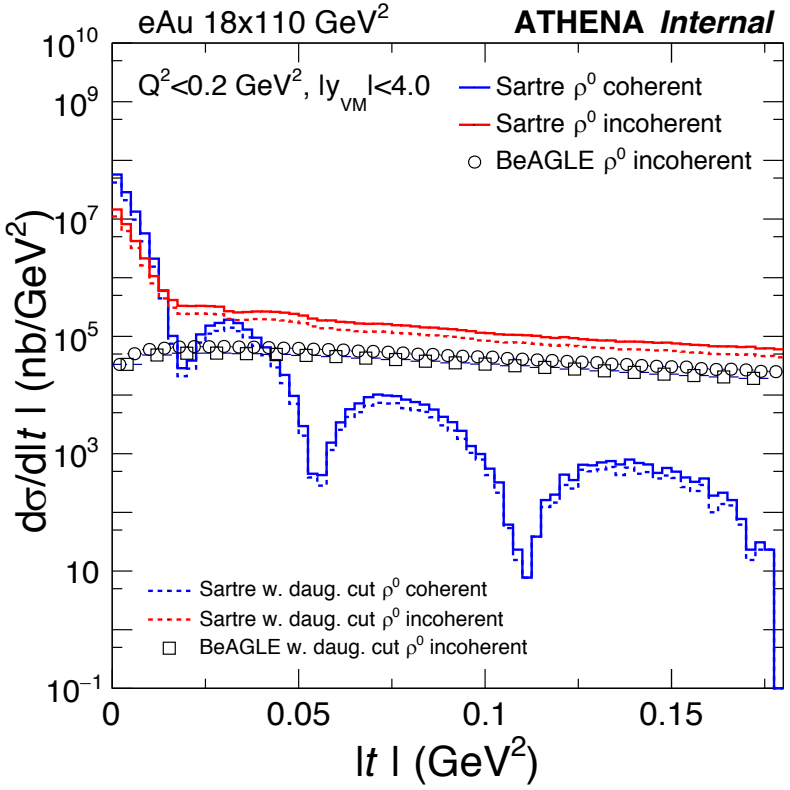




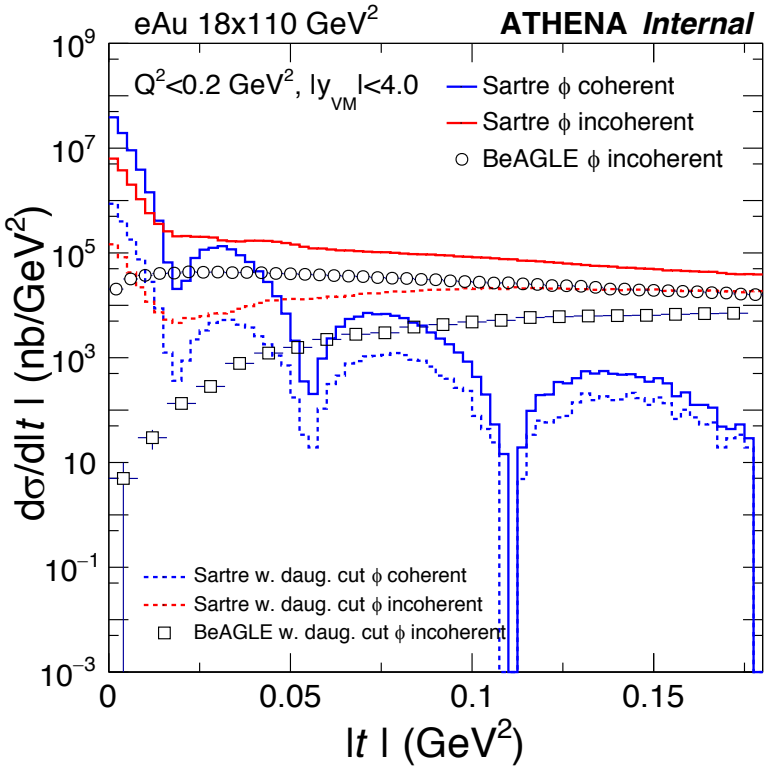


[These have the problem of Q2 limits, see next slide for the updated]

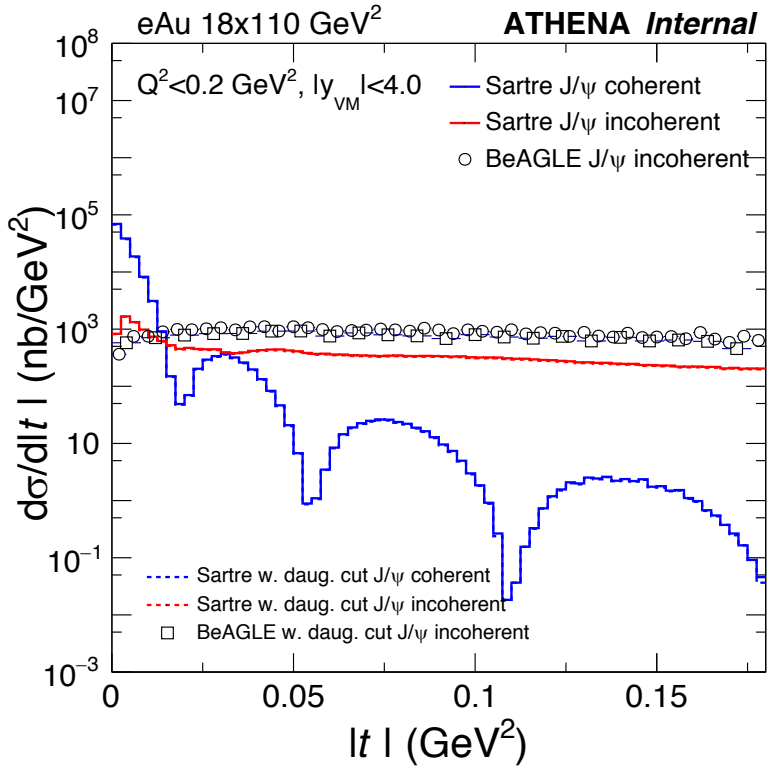
Updated plots – photo-



0.1 < Q2 < 0.2



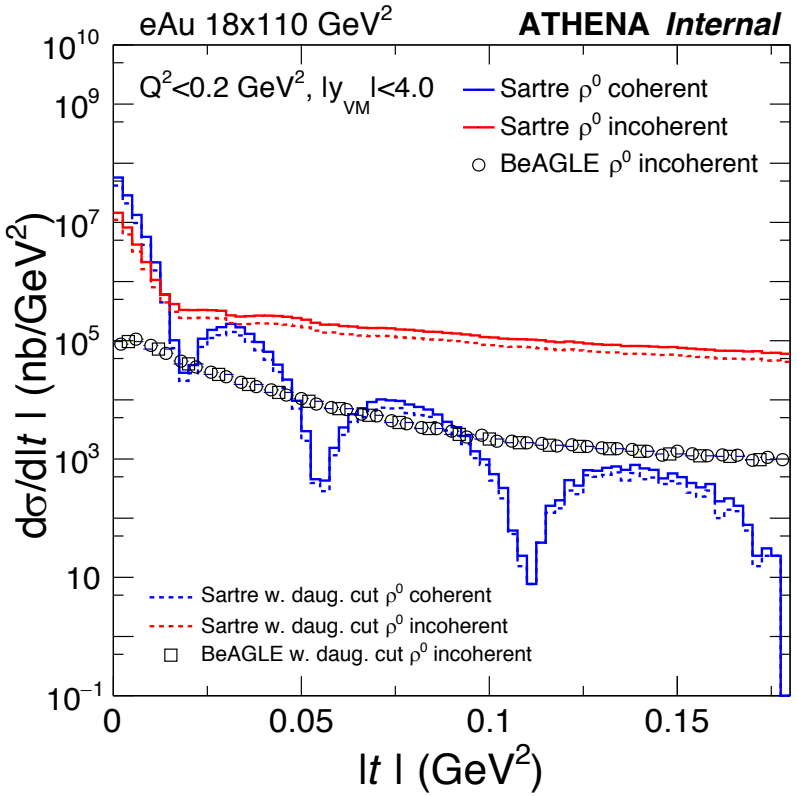
0.0001 < Q2 < 0.01



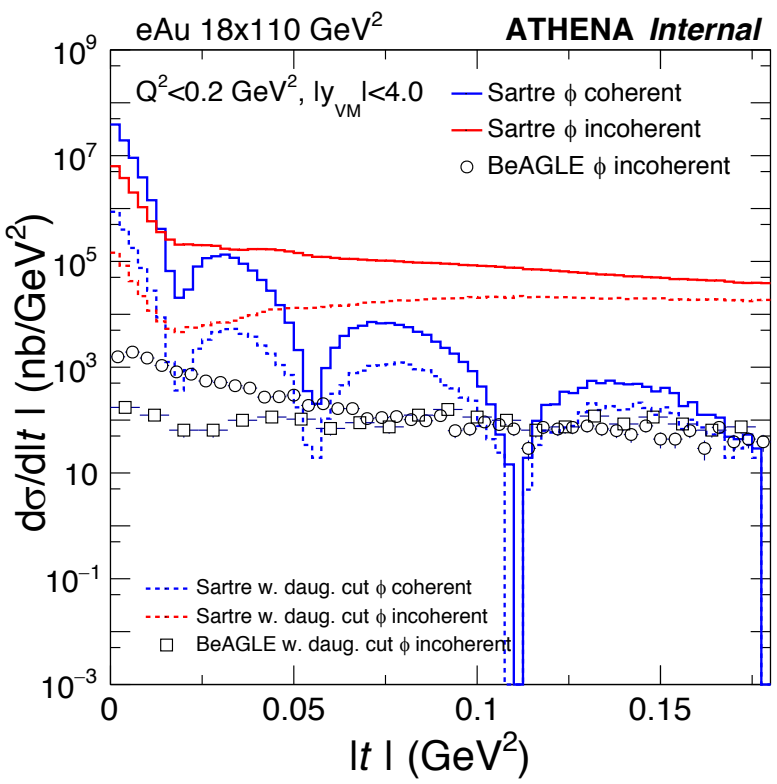
0.0001 < Q2 < 0.01

On the cross section level, j/psi seems to be consistent w.r.t electroproduction. Rho and phi seems to be different

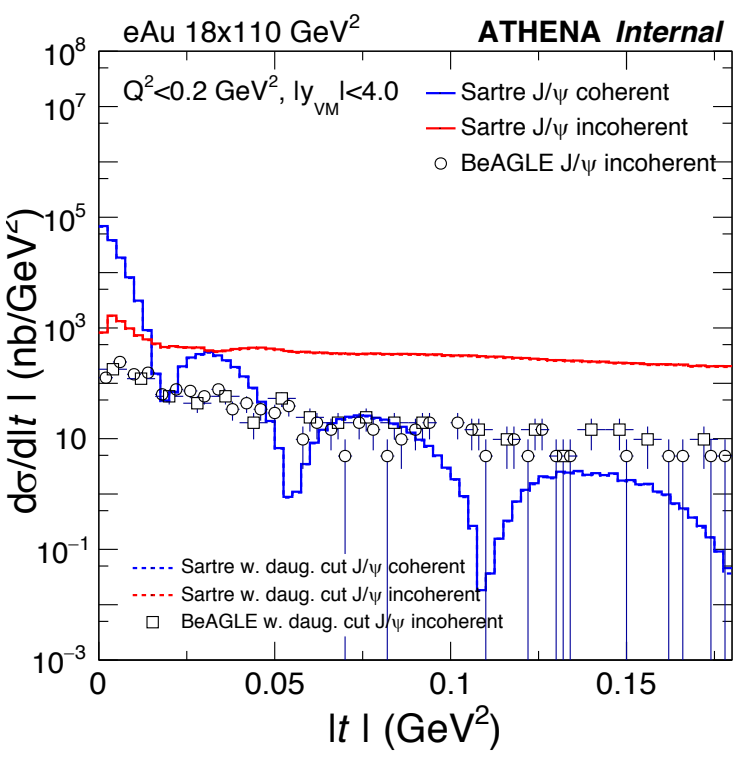
Updated plots – photo- & veto



0.1 < Q2 < 0.2



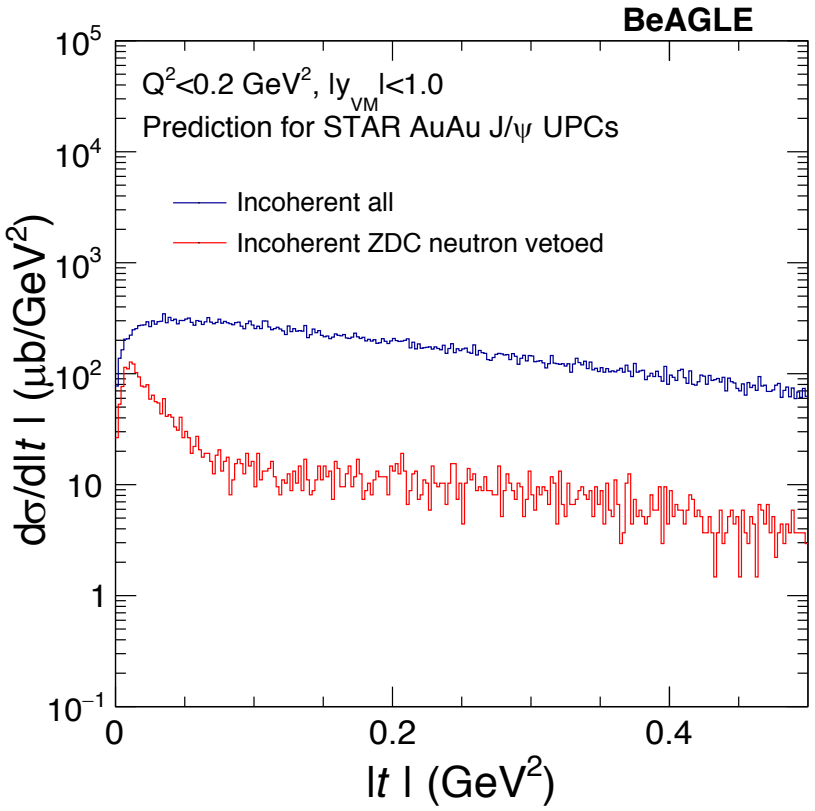
0.0001 < Q2 < 0.01

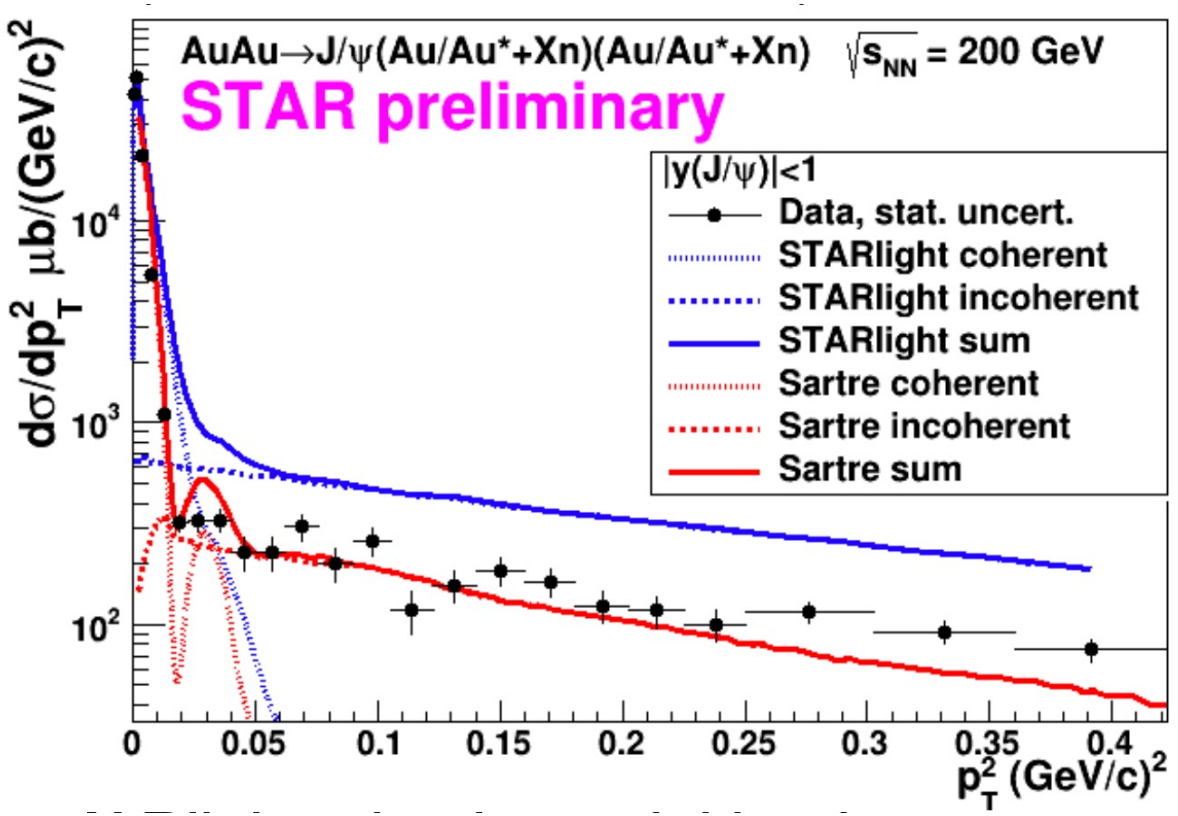


0.0001 < Q2 < 0.01

Veto is still not enough, same as electroproduction…

STAR UPC photoproduction J/psi



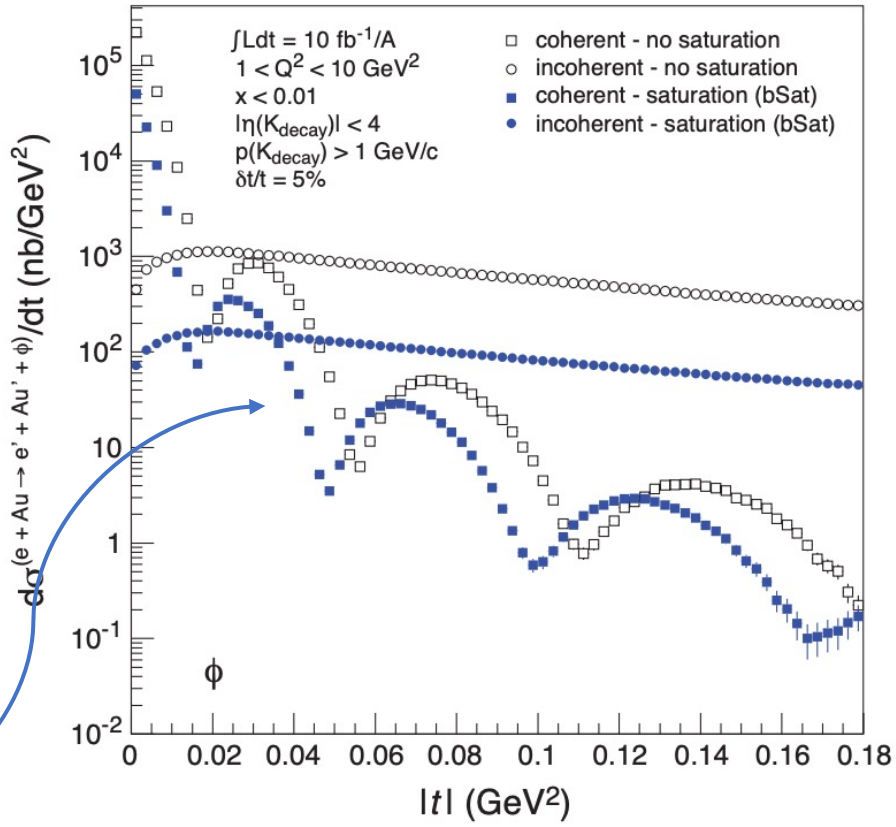


BeAGLE → eA cross section →gammaA cross section x UPC photon flux x STAR acceptance → Almost PERFECT description of the UPC data (incoherent part).

Are Sartre and BeAGLE the same for UPC J/psi but not for "EIC simulations" ? Photon flux?

Summary

- Veto in photoproduction stays the same.
- BeAGLE vs Sartre differs on cross sections (EIC simulations)
- Validation of photoproduction of J/psi using STAR data. Why BeAGLE and Sartre is so close in UPC J/psi?
- Sartre: phi in electroproduction, “Saturation” will be easier to veto? (show in the proposal?)



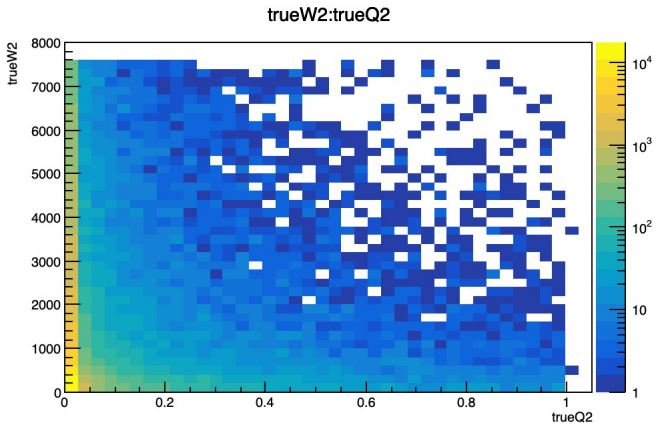
Backup

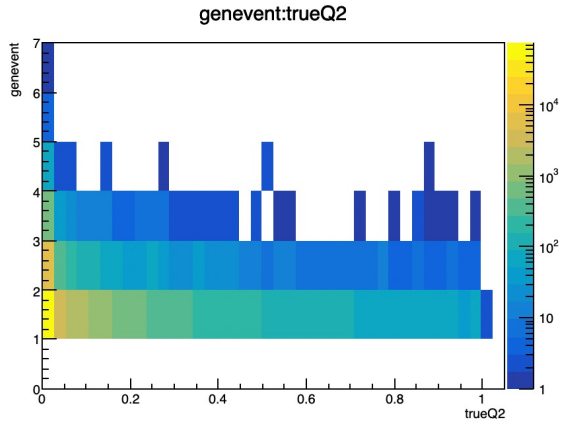
Quick look in the event level quantity in PHP

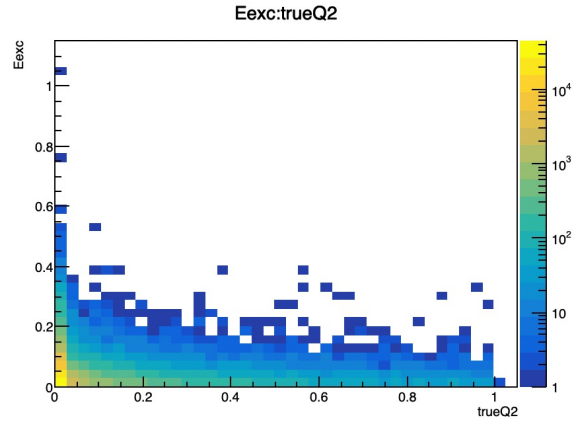
- Nnevap vs. Q2 from 0-2 in Q2.
- RAevt vs. Q2 (User1 for USERSET 0).
- Ninc vs. Q2
- Eexc vs. Q2
- genevent vs. Q2 (tells us if BeAGLE is barfing and rerolling)
- W2 vs. Q2
- 93/91 fraction vs. Q2
- pzf vs. Q2
- sqrt(pxf*pxf+pyf*pyf+pzf*pzf) vs. Q2

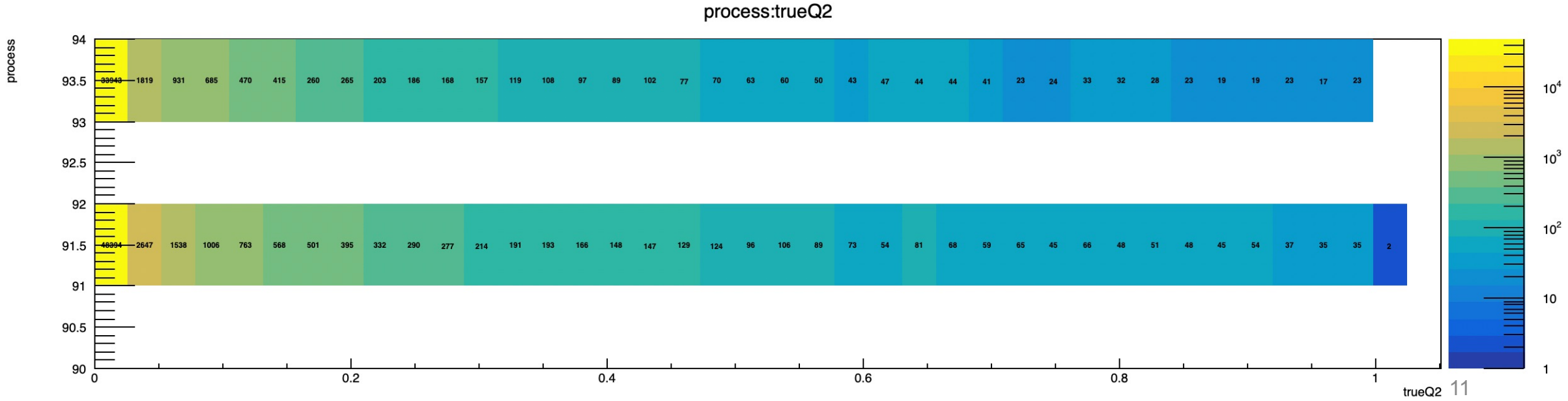
photoproduction

plots

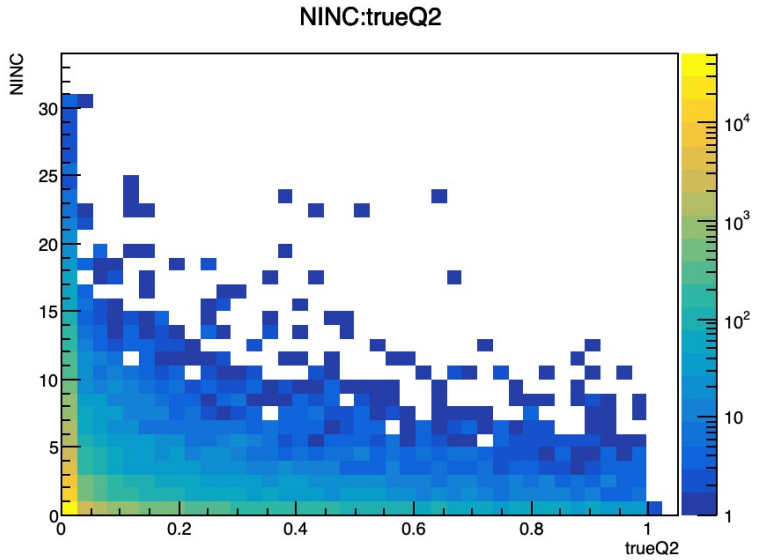


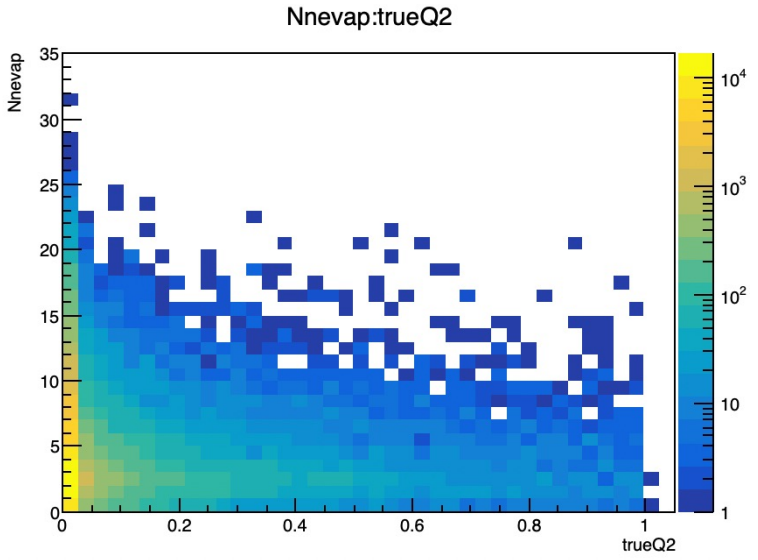


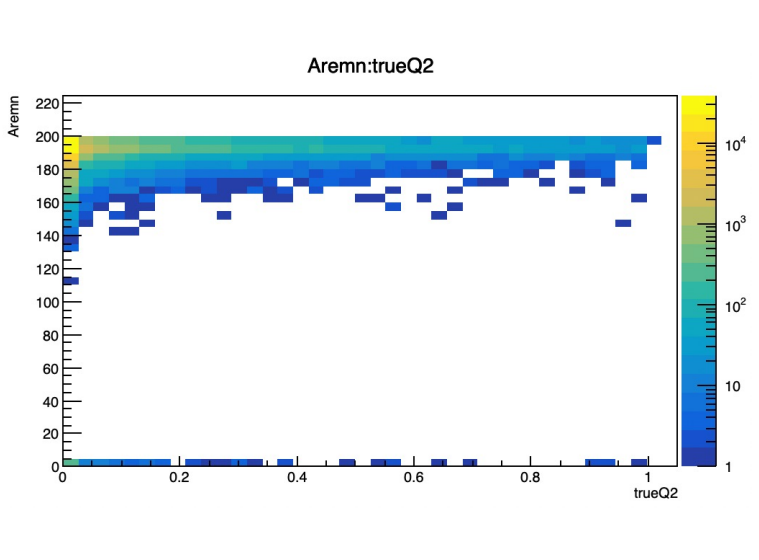


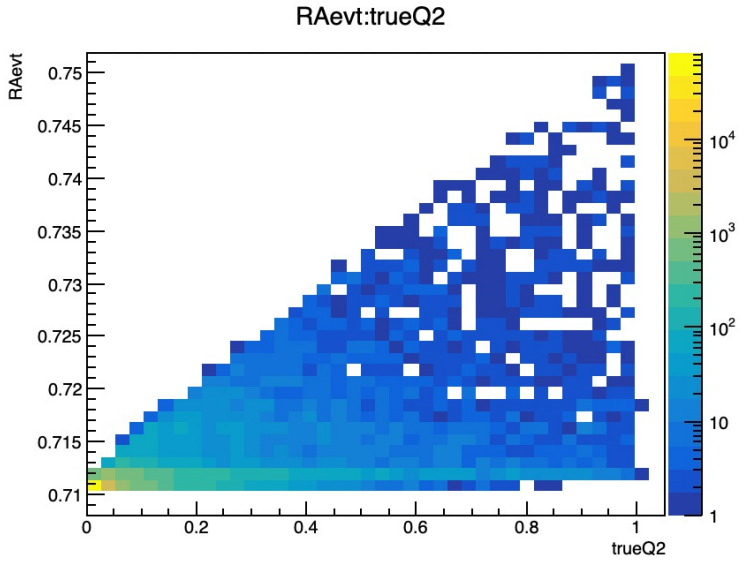


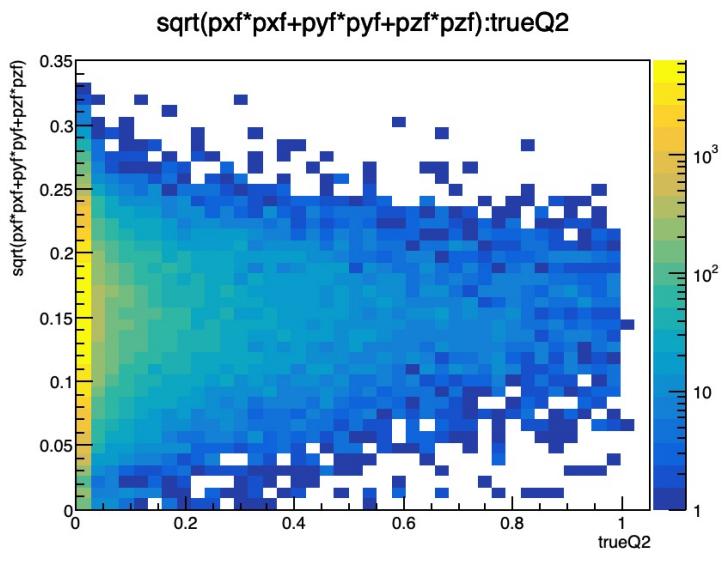
plots

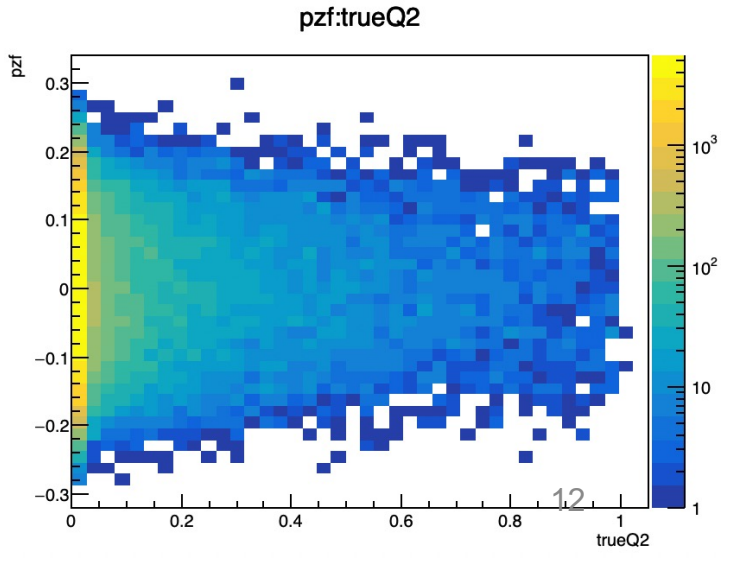

NINC:trueQ2
NINC
trueQ2


Nnevap:trueQ2
Nnevap
trueQ2

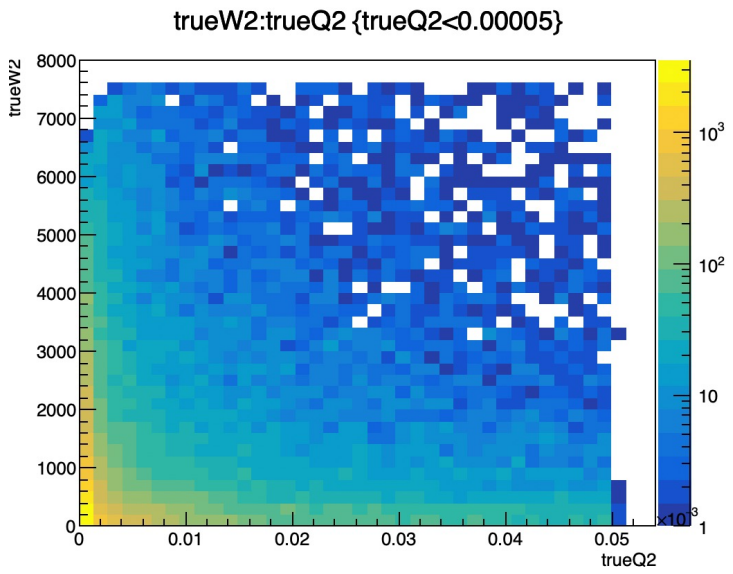

Aremn:trueQ2
Aremn
trueQ2

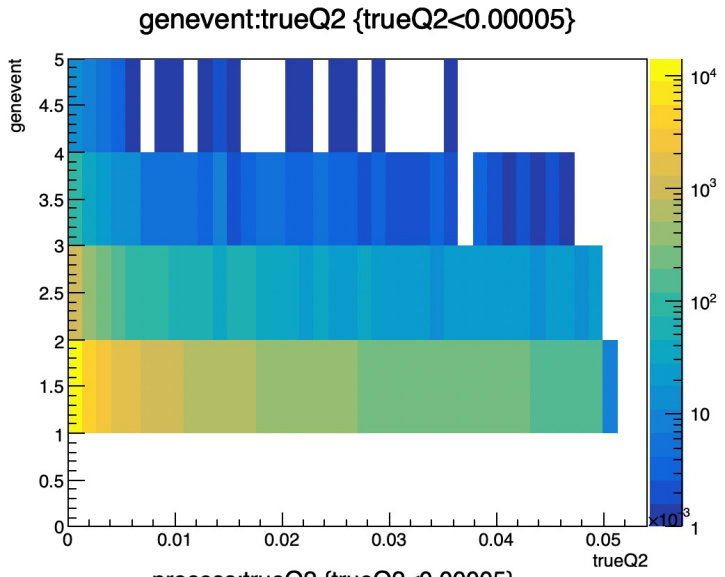

RAevt:trueQ2
RAevt
trueQ2

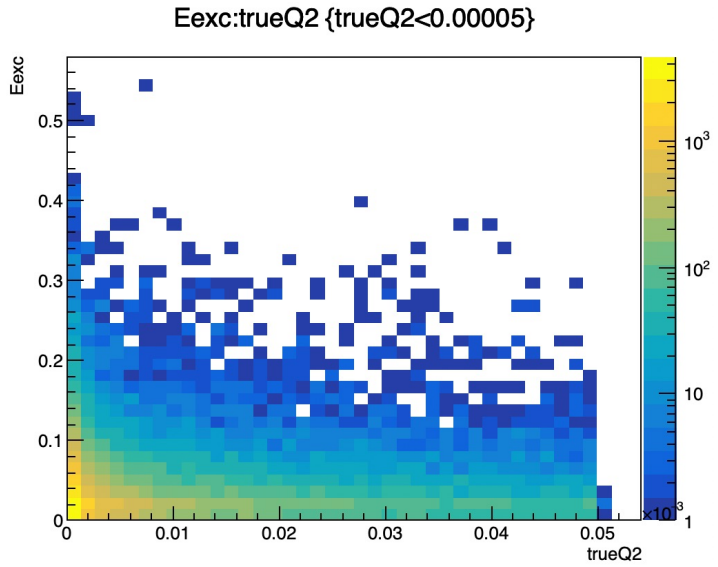

sqrt(pxf*pxf+pyf*pyf+pzf*pzf):trueQ2
sqrt(pxf*pxf+pyf*pyf+pzf*pzf)
trueQ2

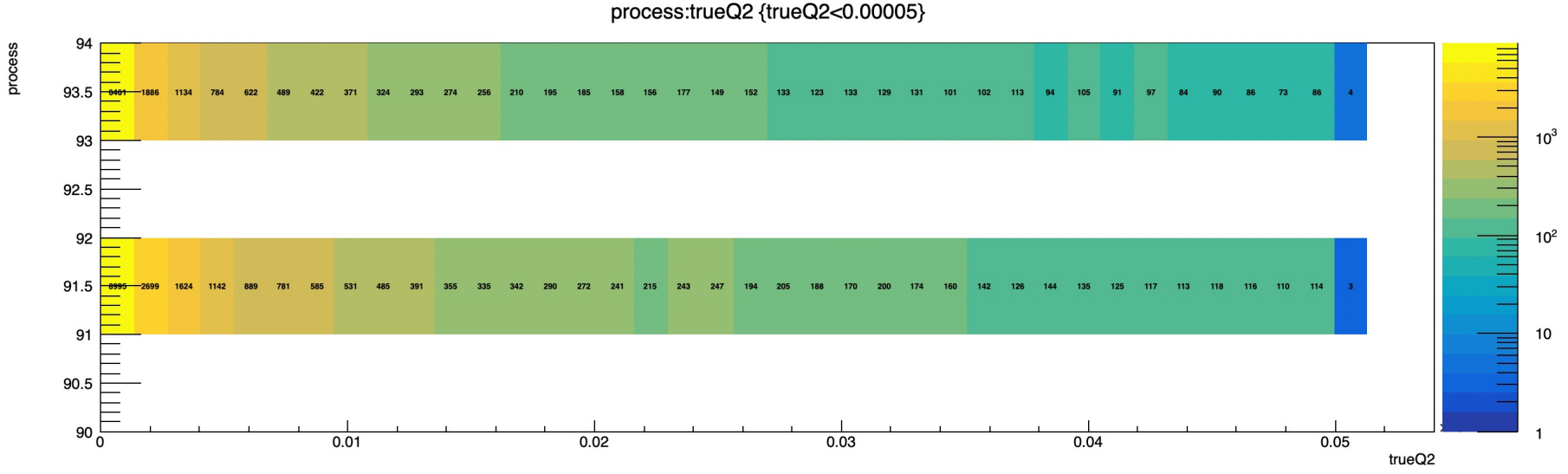

pzf:trueQ2
pzf
trueQ2

Plots – zoom in Q2<0.00005

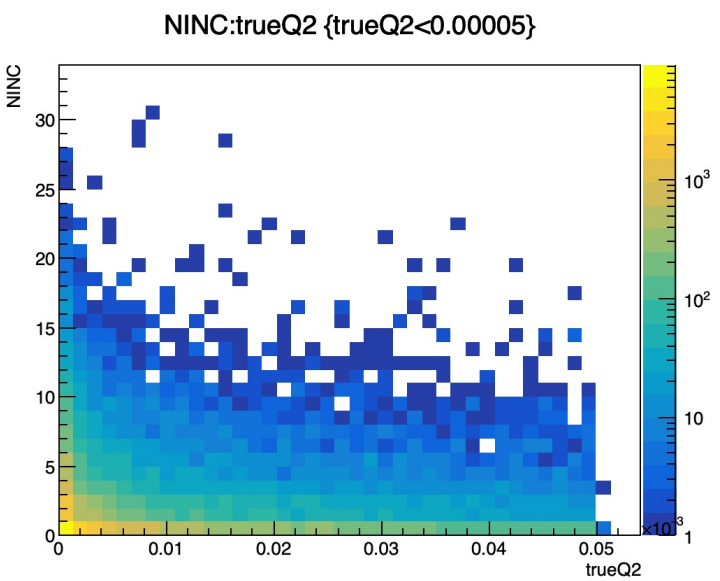


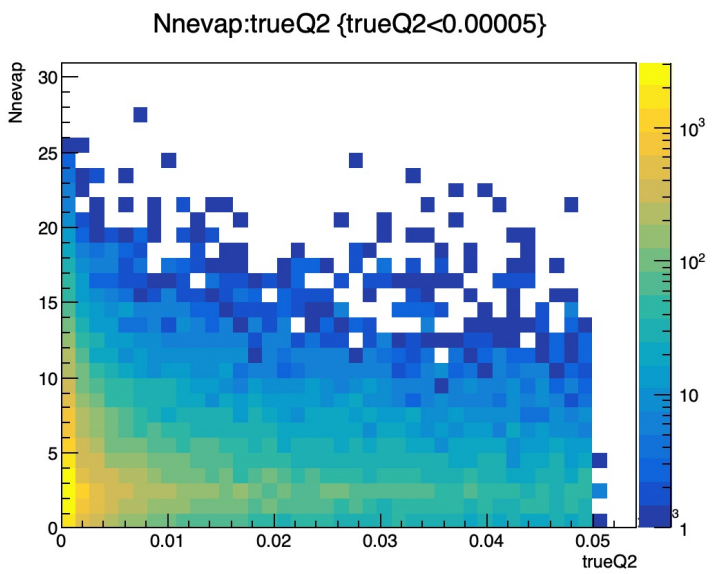


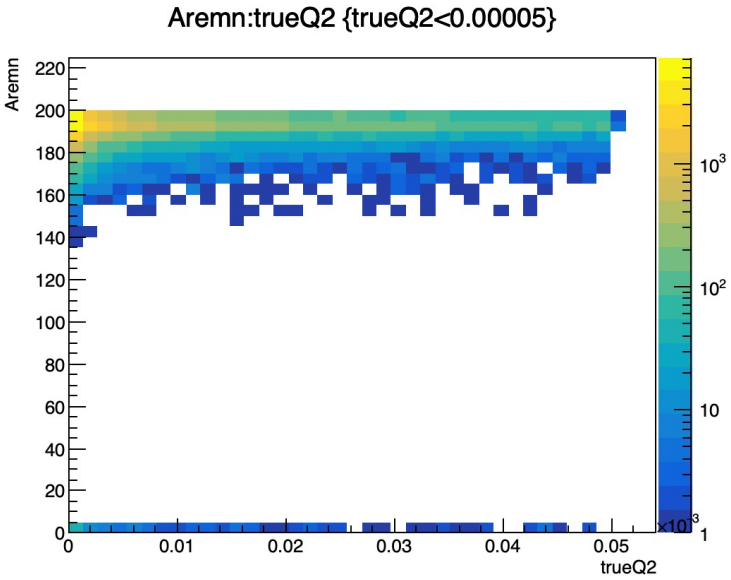


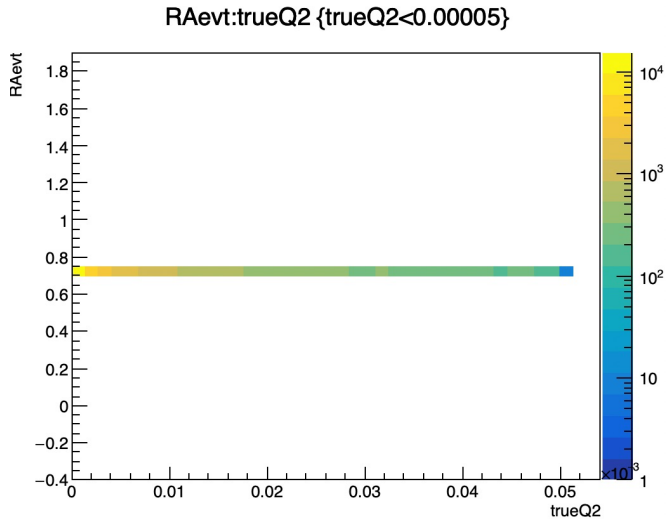


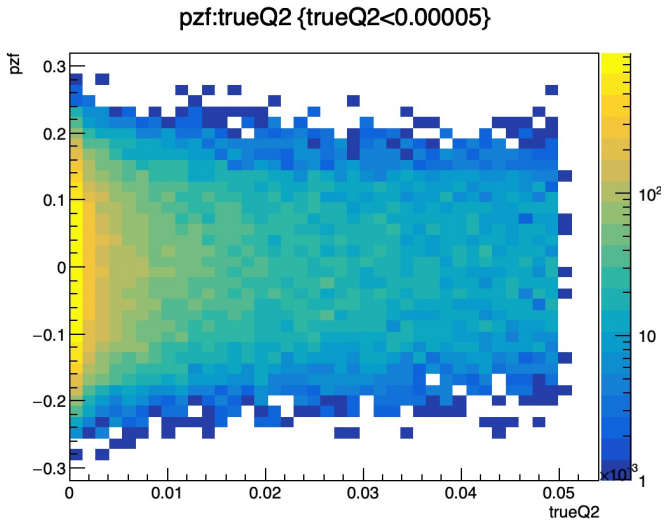
Plots – zoom in Q2<0.00005





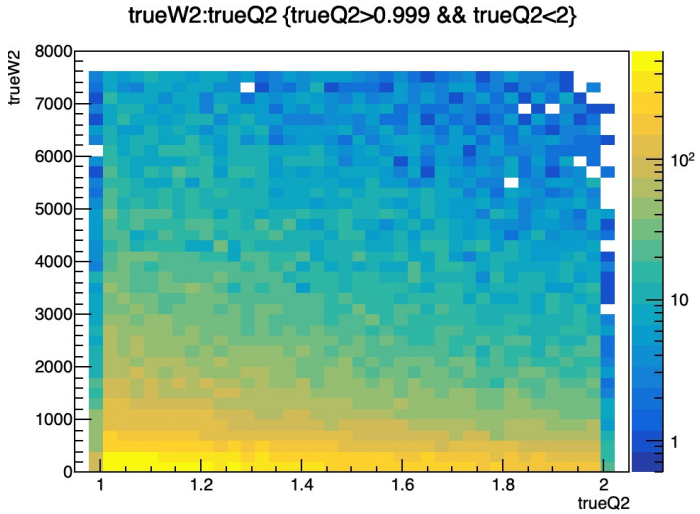


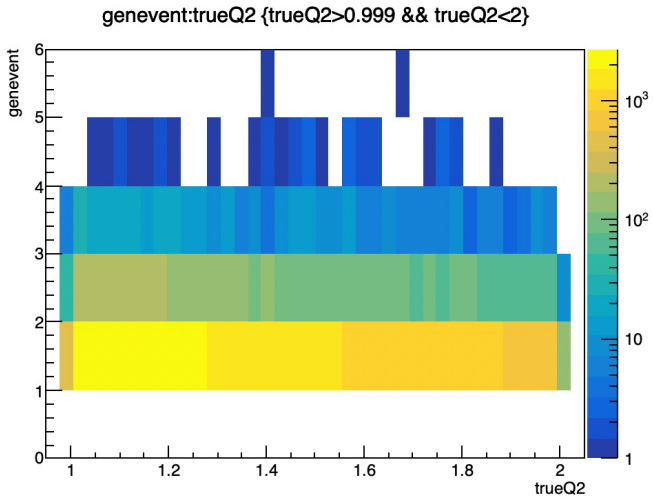


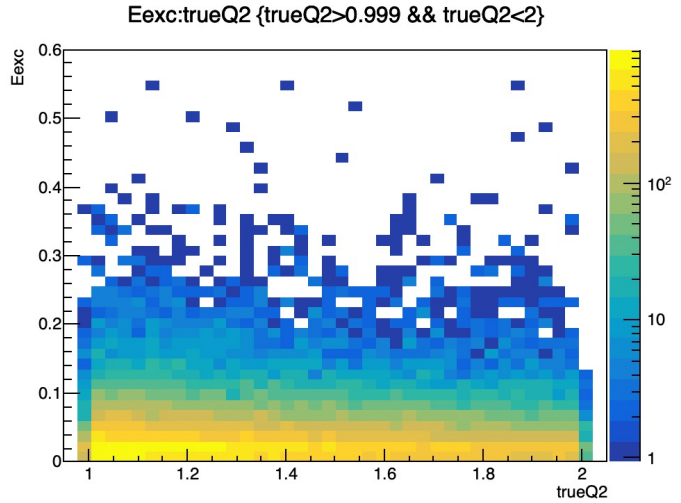


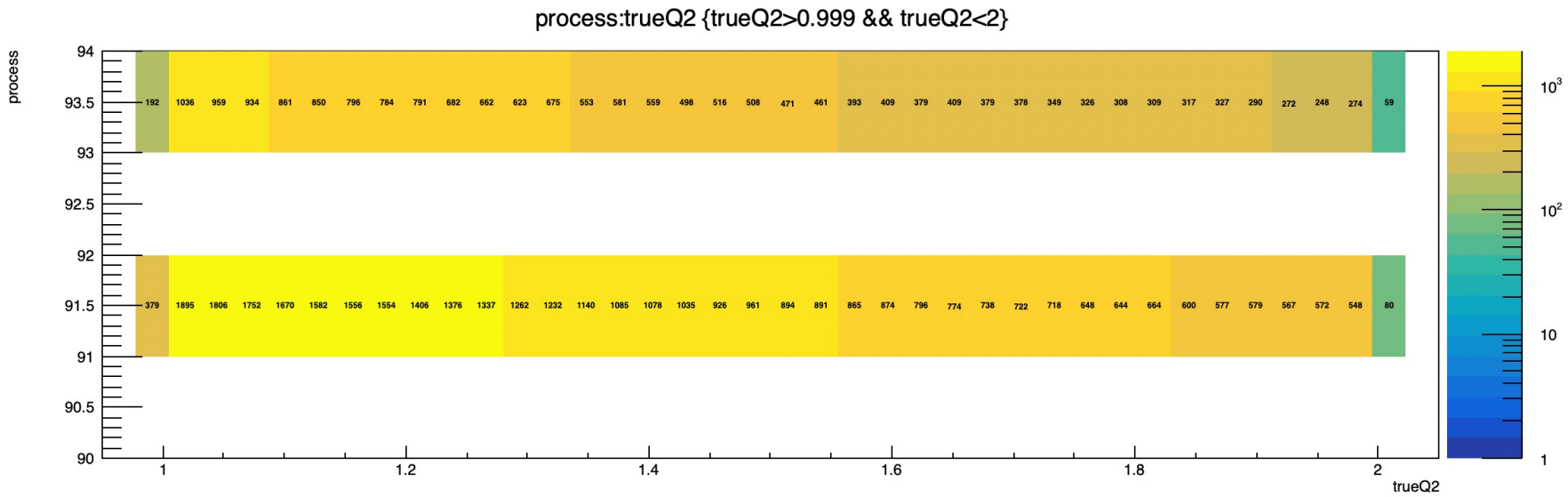
Electroproduction – our baseline for Q2>1, all plots are 1<Q2<2 GeV2

plots



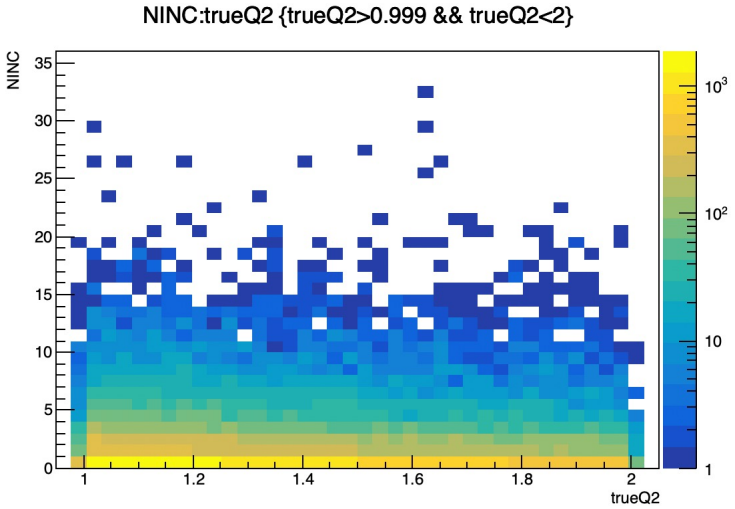


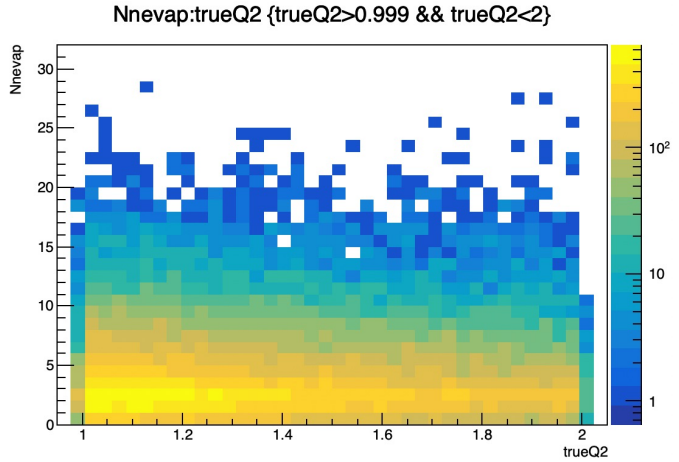


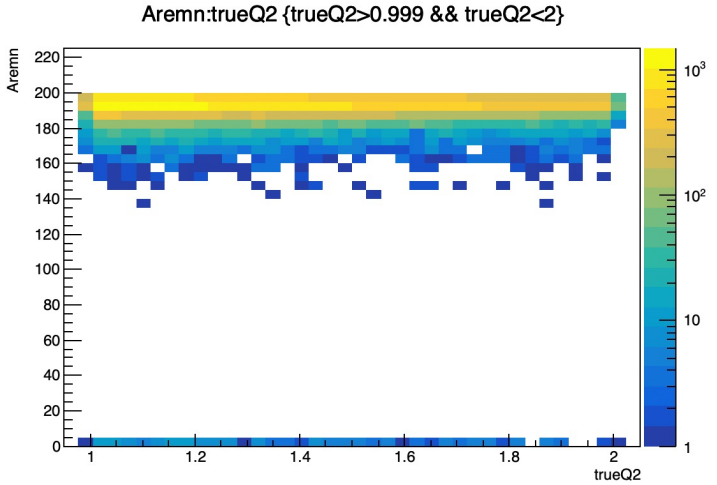


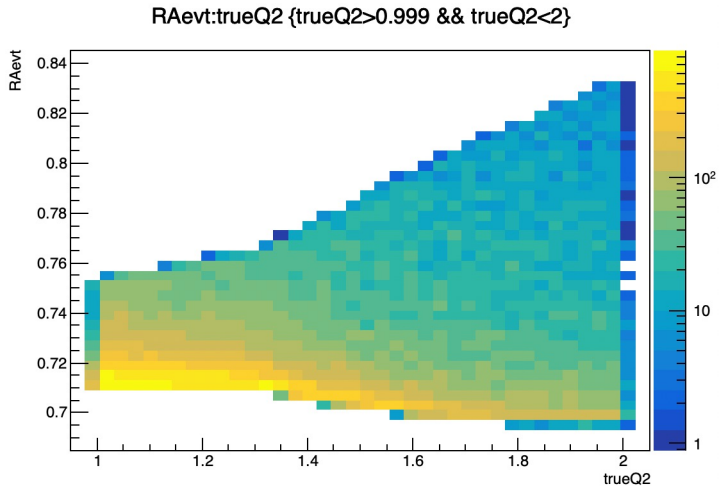
Electroproduction – our baseline for Q2>1, all plots are 1<Q2<2 GeV2

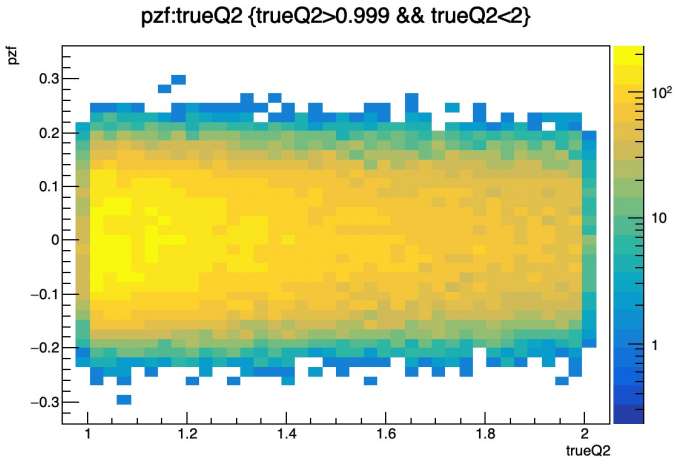
plots











Zoom in on J/psi: BeAGLE vs Sartre